

AFIT/GIR/LAS/99D-6

WHY DIDN'T YOU TELL ME?:
TOWARD BUILDING A MODEL OF WHY INFORMATION
IS NOT SHARED WELL IN ORGANIZATIONS
THESIS

Robert C. Kitchen, 1LT, USAF

AFIT/GIR/LAS/99D-6

Approved for public release; distribution unlimited

The views expressed in this thesis are those of the author and do not reflect the official policy position of the USAF, US Department of Defense, or the US Government.

AFIT/GIR/LAS/99D-6

WHY DIDN'T YOU TELL ME?: TOWARD BUILDING A MODEL INFORMATION
OF WHY IS NOT SHARED WELL IN ORGANIZATIONS

THESIS

Presented to the Faculty of the Graduate School of Engineering and Management of the
Air Force Institute of Technology

Air University

Air Education and Training Command

In Partial Fulfillment of the Requirements for the
Degree of Master of Science in Information Resource Management

Robert C. Kitchen, B.S.

1st Lieutenant, USAF

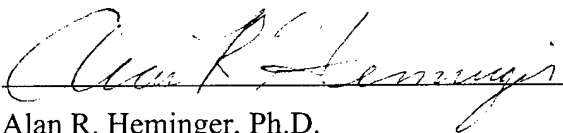
December, 1999

Approved for public release; distribution unlimited


WHY DIDN'T YOU TELL ME?:
TOWARD BUILDING A MODEL OF WHY INFORMATION IS NOT SHARED
WELL IN ORGANIZATIONS


Robert C. Kitchen, BS
1st Lieutenant, USAF

Approved:



Alan R. Heminger, Ph.D.

Advisor


date


David P. Biros, Major, USAF, Ph.D.

Reader


date

Acknowledgements

This research project has given me a chance to explore my abilities in logical thinking. As I was challenged with new problems, I relied on my resourcefulness to understand the problem, find the knowledge I needed, and overcome the obstacle in my path. It was a valuable experience that I'm sure I can call upon throughout my career.

I would like thank the following people for their help in this project: Dr. Alan Heminger, my advisor, who was always there to bounce around some ideas, Major David Biros, for reading my thesis and helping me with the fine tuning and wordsmithing, Major Paul Thurston for his advice on the construction and interpretation of the results of my survey, and my classmates for the relevant feedback and suggestions for consideration along the way.

Finally, and most importantly, I would like to thank my wife Susan and my daughters, Deanna and Emily: their support and understanding throughout the long days and nights of study made this work possible. They are prime examples of those who put 'Service before Self'. To them I am greatly indebted.

Robert C. Kitchen

Table of Contents

	Page
Acknowledgements	iii
List of Figures	vi
List of Tables.....	vii
Abstract	viii
I. Introduction.....	1
Background	2
Problem statement.....	2
Summary	3
II. Literature Review.....	4
Overview	4
Reasons for lack of information sharing:	4
Personal	4
Bounded Rationality.....	4
Status and Control.....	5
Rewards.....	6
Autonomy.....	7
Lack of knowledge where information is stored.	8
Lack of knowledge of how to use the information systems that are available.	8
Interpersonal.....	9
Social/Cultural protocols.....	9
Maintain the Status Quo.....	10
Expensive to communicate.....	11
Incorrect assumption of a common body of knowledge.....	11
Too busy.....	12
Architectural.....	13
Systems are hard to use.....	13
Unmodifiable systems.....	14
'Stovepiped' systems.....	14
Inconsistent information.....	15

Information and systems are too problem specific.	16
Administrative	17
Lack of guidance	17
Lack of authority.	17
Rules and policies.....	18
Lack of established contacts between functionally separated business units.	20
Intermediaries in communication lines may introduce noise to the channel.....	20
The Model	21
Summary	22
III. Methodology.....	23
Overview	23
Case Study Design.....	25
Pilot Study	26
Selection of Sample Size.....	27
Data Analysis	27
Summary	28
IV. Results and Analysis	29
Overview	29
Results	29
Analysis	31
Summary	36
V. Discussion	38
Overview	38
Discussion	39
Limitations	41
Recommendations for Future Study.....	42
Conclusions	43
Appendix A: Data Collection Questions.....	44
Bibliography.....	48
Vita.....	50

List of Figures

Figure	Page
1. Figure 1: The initial model.....	21
2. Figure 2: Rank order of questions by mean.....	31
3. Figure 3: Comparisons of groups	32
4. Figure 4: Comparisons of questions 1, 2, and 3	35
5. Figure 5: The revised model.....	38

List of Tables

Table	Page
1. Table 1: Survey questions by mean scores	30
2. Table 2: Statistics for comparisons of groups	33
3. Table 3: Statistics of comparisons between questions 1, 2, and 3	35

Abstract

The effective use of information in an organization is vital to its success. One of the biggest investments being made today by companies is in their information infrastructures. However, with all of the resources being dedicated to improving information flows, evidence shows that organizations still do not share information as widely as they could or should be.

Many studies have been conducted to learn the reasons why people in organizations do not share information as well as would be good. However, no study was found that reported the relative frequency of reported reasons for not sharing information. This paper gathers and reports that information. A study such as this can help information managers identify areas within their organizations where information is not being shared well and decide where focusing their efforts will be most productive when trying to increase information sharing.

WHY DIDN'T YOU TELL ME?: TOWARD BUILDING A MODEL OF WHY INFORMATION IS NOT SHARED WELL IN ORGANIZATIONS

I. Introduction

In the course of doing business, organizations utilize resources to turn inputs into outputs. Information is one of the resources they use in doing business. Generally speaking, organizations try to maximize resource utility to do what they do smarter, faster, cheaper or better. Yet numerous studies suggest that information is not used as well as it could be (Simon, 1982:408-423; Attewell and Rule, 1984:1188; Sampler and Short, 1994:62; Goodhue et al, 1992:307; Bregha, 1990:194,196; Matheson and Tarjan, 1998:30,33; Nunamaker and Briggs, 1996/1997:167; Davenport et al, 1996:55; Heminger et al, 1996:11; Anderson and Holt, 1997:848; Hitt and Brynjolfsson, 1997:83; Mennecke and Valacich, 1998:176, 186; Ackoff, 1980:29, Hahm et al, 1995:1248-1258).

These studies have identified a number of reasons why people do not share information as widely as they could. However, no study was found that showed the relative frequency of these reasons, or put any of the reasons into potentially useful categories. This study will compile a list of reasons identified in the literature, categorize them, and build a model of the reasons why people do not share information in organizations. It will also seek to learn more about the relative frequencies of these reasons for lack of sharing.

Background

Organizations collect information in order to make informed decisions. Put simply, there is a deceptively simple pattern of input information/output decision (Elliott and Pallais, 1996, 59). In the absence of good information, decision-makers will not have a sound basis for planning their decisions (Davis, 1996, 39)

This suggests that information availability is essential to the decision-making process. As more relevant information is channeled to organizational decision-makers, their ability to make better decisions increases. Ashby's theory of requisite variety says that the larger the number of responses a system has in its repertoire the more likely the system is to be able to adjust to environmental changes and threats, or to capitalize on opportunities (Ashby, 1961, 213). Information provides the capability to assess those changes, threats, and opportunities, and to identify and choose appropriate responses to them. Ackoff (1980, 30) notes that the effectiveness of an organization depends in part on its having "the right information at the right place at the right time."

Problem statement

A better understanding of the reasons for limited information sharing and their frequency would provide managers a means to better address the task of getting the right information at the right place at the right time. However, no comprehensive tool or model has been found to aid in this understanding. This study will propose such a model using previously identified reasons for lack of information sharing and measuring how often these reasons occur within an organization. Based on this model, it will collect data designed to explicate the relative importance of identified reasons for not sharing.

Summary

Knowing how valuable information is to an organization, it follows that the management of information is an important function. Simply having information in an organization is not enough. For information to be effective, it must be made available to the appropriate decision-makers. Organizations that widely share information are more likely to get that information to where it can be used effectively than organizations that do not share their information widely. Evidence shows that sharing information with those who need to use it does not happen as well as it could. Many studies have looked into this and a number of reasons have been identified.

Chapter two will explore the research that has addressed the issue of information sharing in organizations and will compile a list of the reasons for this. Based on this, a model will be developed that identifies the categories of reasons for not sharing organizational information. Chapter three will address the methodology for conducting the research including detailing characteristics of the subject of the research, and the data collection technique. Chapter four will provide the results of the data collection. Chapter five will discuss the results obtained in Chapter four along with implications, limitations of the study, and suggestions for future research.

II. Literature Review

Overview

This chapter will report on an exploration of the literature to learn what has been published about reasons why information is not shared within organizations as well as it could be. Based on this, an initial model will be developed that identifies the categories of reasons for not sharing organizational information.

Reasons for lack of information sharing:

The research studies listed in this chapter suggest that many organizations do not share information optimally for various reasons. A review of these studies suggests that the reasons could be categorized into one of four groups: Personal, Interpersonal, Architectural and Administrative. This categorization will form the basis for the model developed for this study. Although these categories were not identified in the literature, each of the identified reasons why information was not shared appeared to fit into one of them. In the following paragraphs, I will discuss each of the categories in more detail.

Personal

Bounded Rationality.

Bounded Rationality is defined as:

the [observation] that decision makers have constraints on their cognitive capabilities and limits on their rationality. Although decision makers often intend to act

rationally, this intention may be circumscribed by their limited information processing and communication ability. (Simon, 1982: 408-423)

People have limits on their ability to recognize valuable information and to communicate it in a way that others may understand. A person may possess information he finds valuable but not realize that it would be valuable to others if it were shared. Conversely, people may have access to information, but not recognize and assess its value. Even if the person who possesses information understands its value, he may not be able to articulate it clearly. Consequently, the information may be passed in whole, in part, or not at all.

Status and Control.

People may use organizational information to maintain or enhance their organizational status or control (Attewell and Rule, 1984:1188). In keeping information to themselves, people may use it as a bargaining chip to get jobs done, create strategic and political alliances, and further their own careers. If information is widely shared, it is no longer a scarce resource that can be used in bartering for organizational power. Attewell and Rule (1984:1188) point out that control of information is a source of power. "New technologies that alter the quality and availability of information are likely to shift balances of power between various groups of organizational actors—workers, supervisors, middle managers, executives, etc." Also, controlling information leads to "increased centralization of power and decision making in computer-automated organizations." (Attewell and Rule, 1984:1188) This centralization of decision-making may take away much of the span of authority which people have within their jobs.

People value personal responsibility and control of their environment (Sampler and Short, 1994:62). When efforts are made to enhance sharing of information within an organization, people who are custodians of information may resist this as a threat to their established control and influence within their environment. Sampler and Short (1994:62) note that altering such work flows may be met with resistance from organizational members. "Resistance is generally the strongest from those directly affected, and for long-studied reasons they will oppose perceived reductions in their individual resource control and/or work focus and scope." (Sampler and Short, 1994:62)

"Even with large net benefits to the organization as a whole, data integration may distribute those benefits and costs in an uneven way, reducing the local autonomy of some divisions, changing the level of access to critical information, or changing the power balance in some other way." (Goodhue et al, 1992:307) Freely sharing information throughout an organization may threaten existing power relationships people maintain within the institution. To minimize this effect, people may hoard information. (Bregha, 1990:194) Even when people cannot hoard information, they may try to taint the information for personal gain. "Those who control [an information] channel can also cause information to be misinterpreted intentionally. Controlling the channel can be very powerful, creating bad incentives to use the channel to the advantage of the controller rather than the advantage of the company." (Matheson and Tarjan, 1998:33)

Rewards.

Many organizations base their reward system on personal performance (Nunamaker and Briggs, 1996/1997:167). People depend on getting credit for the work

they do so they can get good performance ratings, raises, bonuses, and so on. Having the information that saves the day can be a powerful boost to a person's standing in an organization. Conversely, the unsung hero who does his job diligently day after day may get no recognition for his efforts and be given average performance reports. If this is so, there may be an incentive to not give away the information without getting the credit. "If organizational rewards are based on individual performance, information access, or specialized knowledge, persons valuing these characteristics may well resist actively participating ... where information is shared and ideas are contributed anonymously." (Nunamaker and Briggs, 1996/1997:167)

Autonomy.

People enjoy being given a task and having management take a 'hands-off' attitude toward the job. In jobs where people use information and knowledge extensively, "the nature of the activity and the people who perform it resist heavily structured, standardized approaches." (Davenport et al, 1996:55). Hackman et al (1975, 217) list autonomy as one of the five core characteristics of jobs that elicit a psychological state conducive to job enrichment. They describes the relationship between the freedom from certain oversight and job performance. When autonomy is high, job performance relies on efforts and initiatives of the individual. Job performance will not rely on personal directions from the boss or checklists. This suggests that if knowledge workers are already self motivated, they have little need for close supervision. In fact, having such rigid structure to the job may serve as a disincentive.

Lack of knowledge where information is stored.

Heminger et al (1996:14) note that very often people do not know whether the information they need or request from another part of the organization is currently being captured. Many times, "the information is available but in a form or location unknown to those with a genuine need to know." (Heminger et al, 1996:14). To illustrate this point, the Air Force Institute of Technology (AFIT) receives yearly surveys from the Council of Graduate schools, National Science Foundation, and Integrated Post Secondary Data System. In one survey, AFIT was asked to supply student gender and ethnic background data. The person answering this query did not know that this information was already available. AFIT had to resort to a manual search of all student records for this information. "This information could have been gathered through [an existing system called] PC-III. The personnel systems manager (PSM), could have easily written a query to pull this information from the Personnel Data System (PDS)." (Heminger et al, 1996:14)

Lack of knowledge of how to use the information systems that are available.

Analysis of interviews with users of AFIT information systems led the case analysis team to conclude the following: "(1) the majority of people within AFIT do not know how to use the existing systems, and (2) without a process to train these individuals, AFIT will find itself in the same position into the foreseeable future." (Heminger et al, 1996:17)

Interpersonal

Social/Cultural protocols.

In many organizations, people are expected to communicate according to a set of rules commonly accepted within the organization (Matheson and Tarjan, 1998:30). These protocols can stand in the way of direct communication with those who make decisions. When this happens, valuable information may be isolated from decision-makers if it resides at higher or lower levels in the organization. In many hierarchical organizations, it is understood that senior managers speak to senior managers and junior employees speak to junior employees. When young, front line employees are the ones holding information that must travel quickly internally, this protocol blocks and filters information. "Junior-to-junior communication tends to be a back channel for information sharing. While this channel does provide communication across levels of the hierarchy, junior communications are not potent. Younger employees do not have decision-making powers." (Matheson and Tarjan, 1998:30)

How employees fit into the organization, what is expected of them and what benefits they will reap in return can also affect the flow of information. In a study based on a joint venture between a United States software firm and a Japanese counterpart, this point became more evident as roles and expectations began to form. "A disparity in expectations, rooted in cultural differences, prevents effective communication. U.S. high-tech employees taking risks expect to be compensated well and to retain some decision rights." (Matheson and Tarjan, 1998:30) In the retention of decision rights, employees also expect to have the information available to them in order to make quality decisions.

This demand for the consumption of information will affect the dynamics of the flows and control of information within an organization.

In contrast to U.S. employee expectations, "Japanese employees expect to sacrifice for the company now to obtain rewards based on seniority later. When issues are discussed under such different assumptions, critical points never get addressed, such as how to maintain appropriate incentives and decision rights." (Matheson and Tarjan, 1998:30) Without deliberating where the decisions are made within an organization, the flows for information cannot be mapped out. In such cases, there can be no guarantee that information will be made available to those who can make the best use of it.

The facts uncovered in this scenario are not limited to the differences between American and Japanese cultural expectations. There are many cultures that can be found even within a single organization. (Matheson and Tarjan, 1998:30)

Maintain the Status Quo.

People may decide not to share information if it deviates from information that is currently accepted as common knowledge (Anderson and Holt, 1997:848). Even when personal information may be of higher quality than the organizational information, people may not wish to upset the apple cart. Anderson and Holt (1997:848) describe studies where subjects were posed with hypothetical problems with several alternative decisions.

"Psychologists and decision theorists have found a tendency for subjects to prefer an alternative that maintains the "status quo"... "When one of the alternatives was distinguished as being the status quo, it was generally chosen more often than when no alternative was distinguished. This systematic preference for the status quo is an irrational bias if the decision maker's private information is at least as good as the information available to the people who established the status quo." (Anderson and Holt, 1997:848)

It would seem that people do not want to run the risk of standing out as being wrong in front of their peers. If the common information is wrong, the blame can't be placed on any one person. "[P]eople derive utility from herding together or that they are averse to the risk of standing alone. For example, a forecaster may prefer the chance of being wrong with everybody else to the risk of providing a deviant forecast that turns out to be the only incorrect guess." (Anderson and Holt, 1997:848)

Expensive to communicate.

Hitt and Brynjolfsson explain how sometimes information is just too specific or complex to be able to communicate it to others who do not understand its context (1997:83). Certainly, a highly technical researcher may have problems conveying his research information to a layperson. This is due to the overhead of having to bring the layperson up to speed in the underlying concepts before he can process the information itself. "Specific knowledge is difficult to convey to others and is possessed by a limited number of individuals... Knowledge is specific in part because individuals know more than they can state, and also because information can be expensive to communicate and process." (Hitt and Brynjolfsson, 1997:83)

Incorrect assumption of a common body of knowledge.

As people work together, they build a familiarity with each other. People ease into their roles within the group and may make certain assumptions of how to interact and communicate with others. These assumptions may include a common frame of reference (Mennecke and Valacich, 1998:176). People may communicate specific information to

the rest of the group and based on this common frame of reference, expect the others to be able to process and understand the information. However, the group may not hold a common frame of reference in all cases and implicit information may not be processed and understood. "As a group develops, its members develop shared frames of reference that, in turn, affect their behaviors. In other words, as a group interacts over time, its members begin to view the world through a similar frame of reference. This often leads to the development of a shared understanding of events and ideas, a shared vocabulary, and shared knowledge. This will affect communication in many circumstances."

(Mennecke and Valacich, 1998:176)

Established groups may assume that since there is a common frame of understanding that some things may not need to be explicitly stated. "[I]t appears that established groups are more likely to assume that they understand one another, share similar viewpoints, and have similar information. These factors suggest that they would be less likely to share information." (Mennecke and Valacich, 1998:176)

Too busy.

Many times, people are unable to communicate their views because they are busy digesting information they are receiving from others. Conversely, people may not be able to pick up on information others are trying to convey because they are too busy disseminating information. Either way, information is being received but not disseminated or disseminated but not received. Mennecke and Valacich (1998, 186) note that "Attention blocking" occurs in parallel communication when someone trying to share information with a group is unable to receive inputs from the group because the member

is too busy in the act of disseminating his own information. Conversely, "Production blocking" occurs when participants in a verbal discussion are unable to contribute and process their own ideas because they are busy listening to others. Parallel communication, therefore, creates an environment that is more likely to lead to divergent than to convergent communication. This could retard the information-sharing process because it may reduce the likelihood that group members would recognize that they have different information. (Mennecke and Valacich, 1998, 186)

Architectural

Systems are hard to use.

If humans are to interact with computers, the interface must be built with human capabilities in mind. Systems are fielded closer to the state in which the engineers conceived them than in a state where the common user would find usable. Even when usability is kept in mind when designing the interface, efforts may fall short. Ackoff says, "We have already observed that human engineers are concerned with modifying equipment so that it can be better operated by available personnel. They seldom, however, completely design this equipment." (Ackoff, 1980:29) Many systems are so complex that they require specialized training in order to operate them. Workers at the Texas General Land Office had anxiety about computers being "too difficult to deal with, unreliable, or will not be used successfully... An ex manager said 'Out of about 250 in the organization who use computers on a semiregular basis, 240 of them need an awful lot of training.'" (Hahm et al, 1995:1256)

Unmodifiable systems.

As people use organizational information, the way they organize and view this information may need to change. Even the kinds of information they use may change. But if the capability to accommodate these changes does not already exist within the system, it may take time to create it. If the users will not tolerate the amount of time to create the capability, they may resort to storing information in their own repository where they can manipulate it themselves. When this happens, the information is not being shared, but tucked away from organizational view. Hahm et al (1995:1253) wrote, "It often took an hour or a day to write the custom query program, but with a small number of programmers and many different requests for new queries, it was a very slow process." If quick turnaround was required, some divisions decided to do research manually, which was actually faster than getting a search tool written for that purpose by the data services division.

'Stovepiped' systems.

Information systems are often built with a single purpose in mind without looking at the overall information system architecture within an organization or considering sharing information with other information systems. Each of these systems may be built so differently that they are rendered incapable of communicating with each other. This results in what is called 'functional stovepiping' (Heminger et al, 1996:14). A functional stovepipe results from systems that do not talk to each other or that require considerable effort to share information. Information systems that contain similar and thus redundant information will require additional effort to ensure the information is consistent.

Heminger et al (1996:15) note, "The current [AFIT information] systems are diverse and poorly integrated. Efforts to better integrate the systems have been incomplete and therefore, often unsuccessful. The result is that AFIT has a variety of disparate information systems, some of which do not "talk" to each other, and others which are hard to use. Furthermore, the information contained in AFIT's multiple information systems is often redundant, inconsistent, or simply hard to find." This problem is not limited to AFIT. Hahm et al (1995:1248-1249) describe how the Texas GLO's databases were designed for specific tasks or groups without regard to the value this information would have in other divisions. "As one middle management official put it, "Systems were developed for separate purposes and to a large extent were never designed to be shared." ...Thus none of these agencies' computers could be directly linked to one another. Only through manual printouts or magnetic tape transfer could information be shared."

Inconsistent information.

Sometimes separate systems for separate offices do almost the same thing. There are even instances where there are several systems within the same office doing the same thing (Hahm et al, 1995:1252). This necessitates the update of changes to information in several places, running the risk of inconsistent data. In the case of the Texas General Land Office, small databases were developed "to satisfy each division's specific needs and individually perceived tasks at a given time. Such decentralization increased the risk of redundant data on both the mainframe and microcomputers." (Hahm et al, 1995:1252). It was reported that "there were more than 35 different software packages available in the

GLO... As one staff employee commented "about 10% of the software is not utilized at all." There are two reasons for this. First, the various software packages were only crudely compatible with each other, and as one manager said, "You have there fifteen people using fifteen different packages." Moreover, the database software packages were not fully suited to the needs of the GLO... As a result, there was a high level of redundancy of the existing software and databases: too many small and repetitious databases were developed using many software applications. There were no standardized software requirements for microcomputers." (Hahm et al, 1995:1252)

When people find it hard to store information in established systems, they may store it in off line systems built specifically for that instance of storage (Heminger et al, 1996:17). This only creates another information repository that must be maintained, further risking inconsistencies. "It was mentioned in several interviews that the systems within AFIT are difficult to access and the team has since discovered that individuals have created their own systems to store and maintain data they need." (Heminger et al, 1996:17) This leads to problems of inconsistencies in data, redundancies of information captured and system 'Stovepipes'.

Information and systems are too problem specific.

As people create their own systems for their own use, they rarely consider that others in the organization may find the information useful. Information systems are built in a way that is only usable or accessible to the immediate user, rendering the system and the information unusable and hidden from the rest of the organization.

Hahm notes, "In extreme cases [when sub-units were forced to create their own systems, it] led to databases created for their exclusive use. Moreover, as a consequence, the databases were not shared with anyone because they were too specific and too problem oriented." (Hahm et al, 1995:1254) Also, Heminger et al (1996:14) wrote, "Information is maintained in fragmented and isolated packets that often serve the particular narrow needs of an individual work center, but cannot be made easily available to those outside that center."

Administrative

Lack of guidance.

Without a centralized plan for information systems, people will find their own ways to do their jobs, often in a way that is not standardized with the rest of the organization. In the case of the Texas General Land Office, there were no standardized software requirements for microcomputers. Without this macro view of organizational needs, users acquired several systems for their immediate use but the systems lacked the ability to interact and share information well. (Hahm et al, 1995:1254-1258) Without guidance for information systems acquisition and development, people continue to do business in an organized fashion at the micro-level but inefficiently at the macro-level. For systems to share information there must be a common standard of communication. This is rarely high on the list of priorities for planners at lower levels.

Lack of authority.

Many organizations place restrictions on the flow of information they possess. In some cases, the release of such information may put the organization at a competitive

disadvantage. Therefore, organizations may institute classifications for such information. In such cases, the organization may "classify information in order to restrict its circulation." (Bregha, 1990:196). However, sometimes the organization may create an environment that does not foster the exchange of any information. Bregha (1990:196) further notes that often there is an "unwritten rule that [organization] officials are not to speak to members of the public without receiving prior consent from their superiors." In such an environment, organization members may choose not to share any information they do not have explicit authority to share for fear of breaching organizational security.

Rules and policies.

Some organizations put rules and policies in place that are intended to regulate information passage. Usually this is to scrub the information for accuracy, but it often acts as a bottleneck. Matheson and Tarjan describe one such instance in the use of a 'window person.'

[A] window person is the communication point person for an organization, such as a subsidiary. All communication must travel through the window person on its way to other organizations, such as the parent or other business units. In an environment with a need for high communication bandwidth, window people introduce an impenetrable bottleneck in the flow of information. One person must communicate the needs of the entire project to anyone who controls resources. In addition, it is highly likely that the window person is not the optimal person to control communication. Such a person is usually chosen on the basis of seniority, not merit. In addition, the character of the window person plays a critical role in information flow. Controlling the window imparts tremendous power. A window person can use the channel to further his or her own career goals instead of the goals of the venture (Matheson and Tarjan, 1998, 32).

Organizations who insist on communications being formal may also slow down the communication process. This is especially harmful if the information is time-

sensitive and needs to be communicated immediately. If the information must be forwarded significantly ahead of time of discussing it, the policy may limit the processing of newly acquired information that was not expected in advance. In many instances:

[C]ommunication tends to be formal, especially between U.S. management and Japanese management. For any substantive meetings between U.S. and Japanese management, the agendas for meetings tend to be set weeks or months in advance, and drafts of presentations need to be sent weeks in advance. As substantial deviation from the agenda happens infrequently, this limits what can be communicated (Matheson and Tarjan, 1998, 32).

In hierarchical organizational structures, a rigid communications chain may be established that hinders the flow of information. This becomes a serious impediment when an organization must compete in an environment that is constantly changing and must be quick to respond. This is especially true in the technology arena where 'state-of-the-art' can become obsolete in a matter of weeks.

Fast-paced technology markets tend to reward fluid, participatory organizations rather than rigid hierarchical organizations... From the standpoint of information flow, channeling information up and down a hierarchy slows and filters information, blocking some of it entirely. In software, the need for high-bandwidth information flow is thwarted by a hierarchical organization, creating small overloaded articulation points that do not exist in a distributed, adaptive system (Matheson and Tarjan, 1998, 33).

Although organizations intend ensure the quality and reliability of information, the rules and policies instituted may add a layer of bureaucracy that inhibits its passage. This may present a problem for organizations that depend on information which is not only correct, but timely.

Lack of established contacts between functionally separated business units.

For various reasons, management may wish to separate functional business units. But in doing so, management forces the functionally separate unit to communicate through an unnecessarily lengthy line (Matheson and Tarjan, 1998, 31). Each time communications must be relayed, it introduces delay and the risk of information loss.

Many companies that support research do so in a subsidiary that is separated from any business unit. Usually no established contacts between any business units and the research unit exist, and information is expected to travel up to the management of research, over to the upper management of the business units, and down into them. This may take a very long time, given the research reporting mechanisms. More likely, it will not happen at all (Matheson and Tarjan, 1998, 31).

Management may feel that separation of business units is necessary for conducting business. However, if the separation also removes the ability for organizational members to communicate directly with each other, the resulting increase in the length of the communications channel may hinder communications.

Intermediaries in communication lines may introduce noise to the channel.

Any time information is translated there is a risk of changing the information from its intended meaning. This can be due to several reasons; information in its original terminology may not have an equivalent in the translated terminology, the interpreter may not be able to communicate the information effectively, or a number of other reasons. Yet many organizations find the need to have someone interpret information between organizational units, especially when the receiver of the information might have difficulty processing the information in its original form. Matheson and Tarjan describe how researchers are often removed from the communications process. Management

articulates ideas and information to decision-makers. "Rarely can another scientist understand the technology well enough to articulate this accurately. Usually this degree of separation simply introduces noise into the channel, and valuable information gets affected." (Matheson and Tarjan, 1998, 34)

The Model

As identified in the previous literature, each of the reasons why information is not shared well in organizations has characteristics that allow them to be categorized into the following areas: Personal, Interpersonal, Architectural and Administrative. As mentioned earlier, this taxonomy of reasons was not previously identified in literature, but the reasons uncovered lent themselves to such categorization. In the absence of an existing model, this model is proposed (Figure 1). In building this model, no assumptions were made as to which reasons for not sharing information or which categories of reasons would most frequently occur.

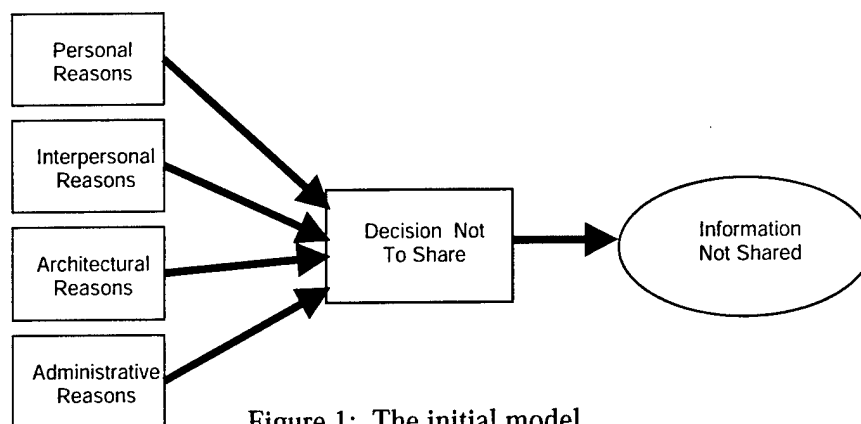


Figure 1: The initial model

Presently, no assumptions can be made concerning the relative frequencies associated with each factor or category of factors affecting information sharing. Therefore, this model currently has no ability to predict what factors are most prevalent within organizations. The study conducted later will attempt to fulfill this deficiency and make this model a useful tool for predicting the prevalence of these factors.

Summary

These studies have identified some of the reasons why people don't share information optimally. However, none of these studies have addressed what the proportions of these reasons are relative to each other. If the frequency of each of the reasons for not sharing can be modeled, decision-makers may be able to estimate how often such reasons are the basis for lack of information sharing within their organizations. Knowing more about the relative proportions of these problems would help an organization to more efficiently control its actions and economically use its resources in overcoming or removing the barriers.

This chapter reported several previously published reasons why information is not shared within organizations. The reasons were organized into four different categories: Personal, Interpersonal, Architectural, and Administrative. Using these categories, an initial model was proposed. This study strive to measure the relative frequencies of the reasons that information is not shared and attempt to identify other reasons not previously discussed in the support literature. The following chapter outlines the methodology to be used in the study. It describes the design of the study, development and administration of the questionnaire, and how the resulting data will be analyzed.

III. Methodology

Overview

The literature has shown evidence that information sharing is not happening in many organizations as widely as would be good (Simon, 1982:408-423; Attewell and Rule, 1984:1188; Sampler and Short, 1994:62; Goodhue et al, 1992:307; Bregha, 1990:194,196; Matheson and Tarjan, 1998:30,33; Nunamaker and Briggs, 1996/1997:167; Davenport et al, 1996:55; Heminger et al, 1996:11; Anderson and Holt, 1997:848; Hitt and Brynjolfsson, 1997:83; Mennecke and Valacich, 1998:176, 186; Ackoff, 1980:29, Hahm et al, 1995:1248-1258). Several reasons explaining why information is not more widely shared within an organization have been identified, however none of the studies have addressed the relative frequency of these causes. Knowing how often this would be to the benefit of the organization that is trying to maximize the effectiveness of efforts to increase information sharing. It would enable organizations to focus their attention and efforts on the major information sharing problem areas and avoid expending resources in areas where information sharing is not as big of an issue.

To explore this question, a means of measuring the reasons why people do not share information within organizations had to be found. Since the decision to share or not share information is a choice, this information would be best collected from people

who make those choices within organizations. The most effective medium to collect such information was a questionnaire. A questionnaire was used to gather a self-report of the frequency of reasons why information was not shared. The questionnaire was developed to capture the perceptions people have about the relative frequencies of their own reasons each cause within their organization. Since information is shared between the people who possess information and the people who do not, it is reasonable to assume that these people would be appropriate to ask to report the reasons and the frequency of the lack of information sharing. Since the questionnaire only asks the respondent to report the personal instances of not sharing information, not why others have not shared, it allows people to share their known reasons. The questionnaire was administered to a large organization with a wide diversity of functions and kinds of information. This chapter will explain how the questionnaire was developed and administered.

Population

The population for this study consists of employees of three large business units of the United States Air Force. The population consists of employees over the age of 18 who are primarily white-collar workers and make extensive use of information in their day to day business. There is a mix of approximately 5% military officers, 10% military enlisted, 35% civil servants and 50% civilian contractors. The organizations within this population were large groups with diverse backgrounds and varying functions within. Furthermore, all three organizations within the population reside on the same Air Force installation. A questionnaire could therefore be conveniently administered. The questionnaire will be e-mailed to the population with the option to e-mail the response

back to the collection point or to mail the response through the local mail courier at zero cost. Therefore, the cost to the respondents is only the time and effort it takes to fill out the questionnaire. It is expected that this will increase the number of respondents.

Study Design

The intent of this questionnaire is to measure personal perceptions of barriers to information sharing and the relative frequency of each. Building on the model developed in chapter 2, the areas of inquiry were grouped into four areas:

1. Personal – Information is not shared due to a lack of personal training or understanding, or people may treat organizational information as if it were a personal resource.
2. Interpersonal – Information is not shared due to personnel using the information as a tool to secure or maintain a position of power in relation to others within the organization.
3. Architectural – The system has been built in such a way that it hampers information sharing.
4. Administrative – The organization has either enacted business rules which hamper information sharing or failed to enact business rules to facilitate information sharing.

The questions address each instance of information sharing barriers that were identified in the literature review. Each question falls within one of the four categories identified above. The respondents are asked how frequently they believe each of the listed barriers was the cause of not sharing information. In case the respondent is aware that there is a problem with information sharing within their organization but does not know the cause or cannot articulate it, a 'Don't Know' category will be provided. There are also areas where the respondents may write in what they perceive as a barrier to

information sharing if it has not been listed. The participants were asked to rate each reason on a 7 point likert scale (always, very frequently, frequently, occasionally, rarely, very rarely, and never).

Questionnaire design

The questionnaire was constructed to measure the frequency for lack of information sharing identified in the literature and identified by the respondent. Questions were written to ask the respondent how often each of these reasons personally occurs. The questions were scrubbed to ensure that the respondents would not be influenced in their answers. To capture the frequency of these reasons, a seven point likert scale was used for each question. A five point scale was deemed to have too large of an interval, thus forcing respondents to answer with less precision. A seven point scale seemed to give the respondent enough leeway to fine tune his answer. Each reason was mapped to only one question. Although asking each question in multiple ways would have allowed for testing for consistency in the data analysis, it was feared that with twenty-three items with several repeat questions that the respondent pool would be smaller. Some consistency may have been sacrificed for gains in response rate.

Pilot Study

A pilot study was conducted to identify any questions in the survey that would be misleading, redundant, dichotomous, or would otherwise cause measurement error. The

pilot study subjects consisted of twelve fellow students in the AFIT GIR/GIS masters degree program.

Selection of Sample Size

In order to achieve statistical power, the sample size was set to attain a respondent pool of at least 100. In a previous study on a related subject, the survey response rate was approximately 34%. Since there was no indication that response rates would be different for this survey, the sample size was set at approximately. With an expected response rate of approximately 30-40%, this was expected to exceed 100 respondents. The survey was sent out to three different parts of a very large organization (the United States Air Force) that use information in the day to day operations of business. The three parts, the Electronic Systems Center, Materiel Systems Group, and Air Force Materiel Command, were chosen for their extensive use of information in the pursuit of business. Within the three groups there are contracting, finance, program management, systems engineering, personnel, acquisitions, and other diverse functions which all make extensive use of information.

Data Analysis

As results are tallied from the respondents, mean scores for each factor will be tabulated as a whole. The factors will be rank ordered by mean for each organization and the sample as a whole. Using the mean of each group and conducting a Tukey-Kramer

HSD and each pair student's t at an alpha level of .05 will reveal whether the categories as defined will be scored significantly different from each other.

Summary

Evidence has shown that information is not shared throughout an organization as much as would be good. This study will use a questionnaire to ask people the reasons why they do not share and the frequencies of those reasons. The mean scores will be tabulated for each question and each question will be compared to the others to find if they are scored significantly different from each other. Similarly, the mean scores of each category (Personal, Interpersonal, Architectural, and Administrative) will be compared to find if each category as a whole is different from the others.

IV. Results and Analysis

Overview

The survey was sent out to approximately six hundred people via e-mail to the three organizational units of a large government organization. Ninety-five surveys were returned. One was rejected for having large amounts of missing data. Mean scores were tallied for each of the questions. After rank ordering the questions by mean, it was evident that the scores clumped by category. Grouping each question by category, each group was analyzed using a Tukey-Kramer HSD and Student's t test to see if they were scored significantly different.

Results

The questionnaire asked participants to rate each question on a 7 point likert scale.

The scores associated with each answer were:

Never	Very Rarely	Rarely	Occasionally	Frequently	Very Frequently	Always
1	2	3	4	5	6	7

In order to find out which reasons for lack of information sharing are most and least prevalent, the questions were rank ordered by mean. The mean scores of each question were:

Table 1: Survey questions by mean scores

<u>Question:</u>	<u>Mean Score:</u>
21. Management expects that information passed between offices must first go up one office's chain of command and down the other office's side.	4.366
19. The information must be scrubbed for accuracy before I can release it.	4.043
22. There are no established points of contact between functionally separated business units.	4.043
1. I do not believe the information that I hold would be of value to others.	4.00
20. Management expects the information to be presented in a formal presentation, which introduces delays in sharing time-sensitive information.	3.946
7. I needed to share information with someone higher than my boss but there is an accepted norm that subordinates do not circumvent the chain of command.	3.903
17. Nobody has come up with a standard policy to make the organization's systems communicate easily.	3.86
23. Information is lost in the translation due to someone being assigned to interpret the information between organizational units.	3.837
10. I assume that the information is already common knowledge.	3.691
11. I am too busy to fully participate in the exchange of information.	3.516
18. I do not have the authority to share the information.	3.457
13. It is too hard to change the information system to handle new kinds of information.	3.398
5. I don't know where to get the information that is needed.	3.394
15. Information stored in my system has not been cross-checked with other systems and therefore may be inconsistent.	3.383
16. The information systems I use were made for a specific purpose, making them useless for anything other than their intended purpose.	3.301
9. The information is too complex to be able to communicate it to others who do not possess a common core of knowledge.	3.213
12. The information systems are too cumbersome to use.	3.161
14. The information systems that I use cannot readily communicate with other systems.	3.129

6. I don't know how to use the information systems that are available.	2.978
8. I don't want to defend information that may conflict with currently accepted common knowledge.	2.83
4. I feel others may use the information to over-regulate my job.	2.415
2. I may be able to use the information as a bargaining chip to obtain other organizational resources.	2.065
3. If the information I hold becomes common knowledge, I will no longer be the 'expert'.	1.67

Analysis

In analyzing the data, the mean scores of each question were rank ordered and put into a histogram from most frequent to least frequent. As can be seen, the scores tended to clump by category (figure 2).

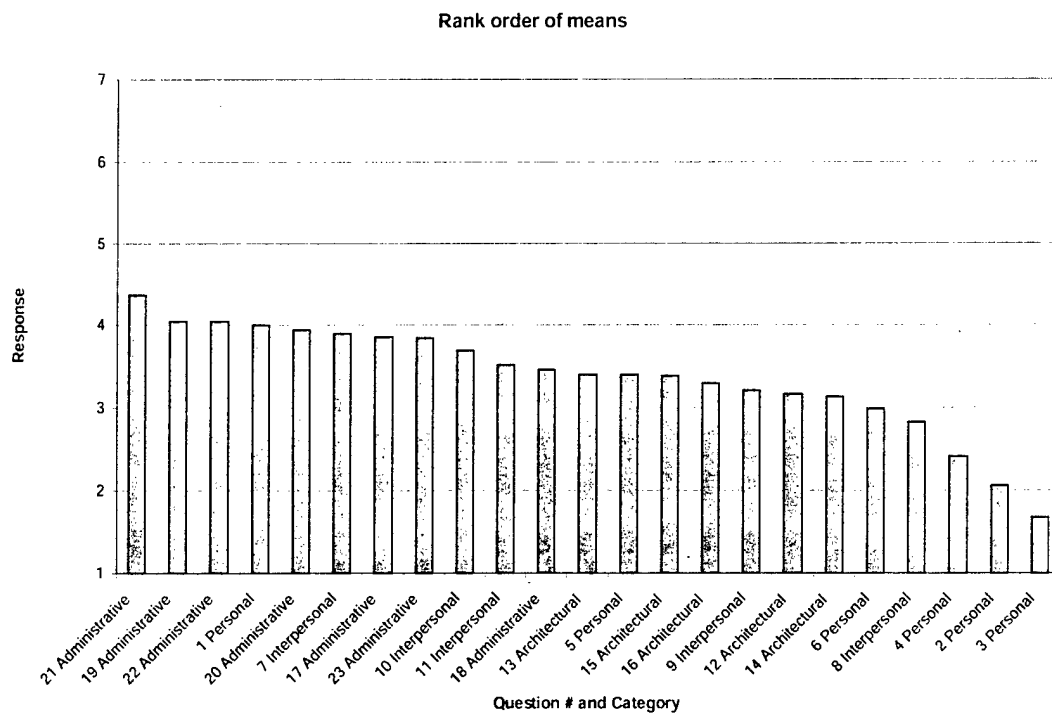


Figure 2: Rank order of questions by mean

Grouping each question by category, (1 through 6: Personal, 7 through 11: Interpersonal, 12 through 16: Architectural, and 17 through 23: Administrative) and taking the mean score of each category showed the following: Administrative reasons as a group were the most frequently identified reasons for lack of information sharing. Architectural and interpersonal reasons as a group were more frequently identified as responsible for lack of information sharing. Respondents reported personal reasons as the group least frequently responsible for lack of information sharing.

Using the mean of each group and conducting a Tukey-Kramer HSD and each pair student's t at an alpha level of .05 revealed that personal (P) reasons as a group were scored significantly lower than the other three categories. In other words, they were identified significantly less frequently as reasons for lack of information sharing. Architectural (A) and interpersonal (I) reasons as groups were identified significantly more often than personal reasons, but were not significantly different from each other. Administrative (AD) reasons as a group were identified as the significantly most frequent reasons for lack of information sharing (see Figure 3. Comparisons of Groups below).

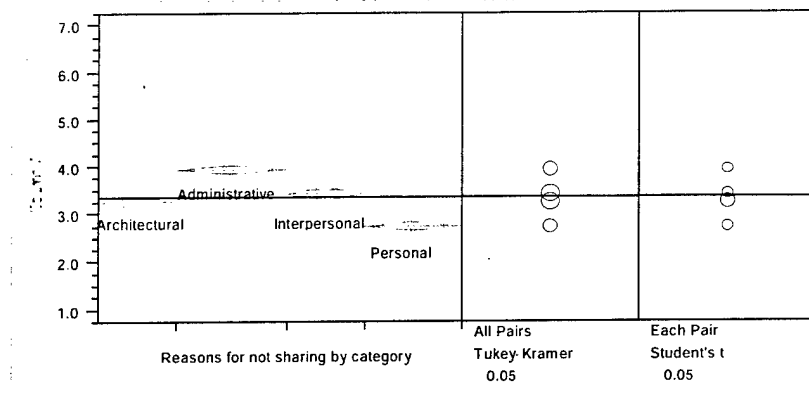


Figure 3: Comparisons of groups

Below (Table 2) are the statistics which support the findings shown in figure 3.

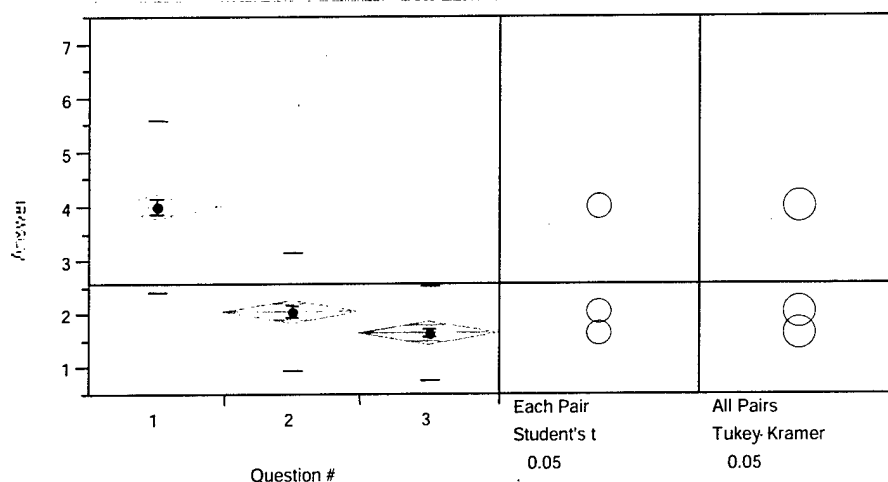
Table 2: Statistics for comparisons of groups

Means Comparisons				
Dif=Mean[i]-Mean[j]	Administrative	Interpersonal	Architectural	Personal
Administrative	0.00000	0.50619	0.66100	1.18568
Interpersonal	-0.50619	0.00000	0.15481	0.67949
Architectural	-0.66100	-0.15481	0.00000	0.52468
Personal	-1.18568	-0.67949	-0.52468	0.00000
Alpha=	0.05			
Comparisons for all pairs using Tukey-Kramer HSD				
q*				
2.57104				
Abs(Dif)-LSD	Administrative	Interpersonal	Architectural	Personal
Administrative	-0.21628	0.269503	0.424016	0.961031
Interpersonal	0.269503	-0.25548	-0.10094	0.435124
Architectural	0.424016	-0.10094	-0.25602	0.280028
Personal	0.961031	0.435124	0.280028	-0.23272
Positive values show pairs of means that are significantly different.				
Comparisons for each pair using Student's t				
t				
1.96110				
Abs(Dif)-LSD	Administrative	Interpersonal	Architectural	Personal
Administrative	-0.16497	0.32565	0.48024	1.01433
Interpersonal	0.32565	-0.19487	-0.04027	0.49310
Architectural	0.48024	-0.04027	-0.19529	0.33807
Personal	1.01433	0.49310	0.33807	-0.17751
Positive values show pairs of means that are significantly different.				

The significance of this difference between each category shows that there is a definite grouping of reasons why information is not shared well. Furthermore, it shows that there is a commonality between the factors within each group that allows them to be scored closely within the grouping. Also, since there is a significance of difference between groups, it gives further evidence that the reasons within each group share a commonality that allows them to be scored alike.

To verify that this apparent order of categories existed among all three organizations, the data was separated by organization and the means of each question were rank ordered. The order continued to exist among the three organizations, but something else became obvious:

Two questions from the personal category were scored very closely to each other at one end of the distribution while one question from the personal category scored at the opposite side. Question 3 (If the information I hold becomes common knowledge, I will no longer be the 'expert') was the **least** frequently identified reason for not sharing information. Question 2 (I may be able to use the information as a bargaining chip to obtain other organizational resources) was the **second least** frequently identified reason for not sharing information. Question 1 (I do not believe the information I hold would be of value to others) was the **most** frequently identified reason by two of the groups. The third group also rated question 1 significantly more frequently than questions 3 and 2. This was tested using a Tukey-Kramer HSD and student's t with an alpha level of .05. (See Figure 4. Comparisons of Questions 1, 2 and 3 below)



Question 1: I do not believe the information I hold would be of value to others (Bounded Rationality)

Question 2: I may be able to use the information as a bargaining chip to obtain other organizational resources (Status and Control)
 Question 3: If the information I hold becomes common knowledge, I will no longer be the 'expert' (Rewards)

Figure 4: Comparisons of questions 1, 2, and 3

Below (Table 3) are the statistics which support the findings shown in figure 4.

Table 3: Statistics of comparisons between questions 1, 2, and 3

Oneway Anova Summary of Fit				
RSquare				0.402589
RSquare Adj				0.398276
Root Mean Square Error				1.246496
Mean of Response				2.575
Observations (or Sum Wgts)				280
Analysis of Variance				
Source	DF	Sum of Squares	Mean Square	F Ratio
Model	2	290.03550	145.018	93.3339
Error	277	430.38950	1.554	Prob>F
C Total	279	720.42500	2.582	<.0001
Means for Oneway Anova				
Level	Number	Mean	Std Error	
1 (Bounded Rationality)	93	4.00000	0.12926	
2 (Status and Control)	93	2.06452	0.12926	
3 (Rewards)	94	1.67021	0.12857	
Std Error uses a pooled estimate of error variance				
Means and Std Deviations				
Level	Number	Mean	Std Dev	Std Err Mean
1 (Bounded Rationality)	93	4.00000	1.58800	0.16467
2 (Status and Control)	93	2.06452	1.14024	0.11824
3 (Rewards)	94	1.67021	0.92036	0.09493
Means Comparisons				
Dif=Mean[i]-Mean[j]	1(Bounded Rationality)	2(Status and Control)	3(Rewards)	
1(Bounded Rationality)	0.00000	1.93548	2.32979	
2(Status and Control)	-1.93548	0.00000	0.39430	
3(Rewards)	-2.32979	-0.39430	0.00000	
Alpha= 0.05				
Comparisons for each pair using Student's t				
	t			
	1.96859			
Abs(Dif)-LSD	1(Bounded Rationality)	2(Status and Control)	3(Rewards)	
1(Bounded Rationality)	-0.35985	1.57564	1.97090	
2(Status and Control)	1.57564	-0.35985	0.03541	
3(Rewards)	1.97090	0.03541	-0.35793	

Positive values show pairs of means that are significantly different.

Comparisons for all pairs using Tukey-Kramer HSD

Abs(Dif)-LSD	q*		
	1(Bounded Rationality)	2(Status and Control)	3(Rewards)
1(Bounded Rationality)	-0.43075	1.50474	1.90019
2(Status and Control)	1.50474	-0.43075	-0.03530
3(Rewards)	1.90019	-0.03530	-0.42845

Positive values show pairs of means that are significantly different.

The fact that these questions are scored with such a difference suggests that there is a negative correlation between them. This will be discussed in the following chapter.

Question number 24, 'Other' was open ended to allow the respondent to identify other reasons for lack of information sharing not previously identified. Of the total number of respondents, 29 filled in answers to the 'Other' question. However, assessing their comments showed that they were not identifying new reasons for lack of information sharing, but were further articulating or attempting to refine the reasons already listed. Since the 'Other' reasons given were so closely related to the reasons already in the survey, any frequencies reported for 'Other' reasons may differ from the ones in the questionnaire. Also, the respondents may have interpreted their 'Other' reasons to be different enough that they did not fit into the listed questions. Adding these responses to the mean scores might confound the results in an unpredictable way. This study will therefore only address the fact that no new reasons were identified.

Summary

Respondents identified administrative reasons most frequently as reasons for lack of information sharing. Architectural and interpersonal reasons were identified

significantly less frequently and personal reasons were identified the least of all. Each question standing alone and independent of its group, Question 3 (If the information I hold becomes common knowledge, I will no longer be the 'expert') was the least frequently identified reason for not sharing information. Question 2 (I may be able to use the information as a bargaining chip to obtain other organizational resources) was the second least frequently identified reason for not sharing information. Question 1 (I do not believe the information I hold would be of value to others) was the most frequently identified reason by two of the groups. The third group also rated question 1 significantly more frequently than questions 3 and 2.

Although some respondents used the 'Other' reason to point out additional reasons for lack of information sharing, the reasons did not seem to differ from those already listed. The fact that the respondents have seen similar reasons for lack of information sharing supports the previous studies as well as the model used in this study.

V. Discussion

Overview

The results of this study suggest that the most frequent barriers to information sharing occur due to administrative reasons. These may be introduced either purposefully to regulate the flow of information or accidentally. Less frequently reported are architectural and interpersonal problems. The least frequently reported reasons relate to personal factors (see fig 5 below).

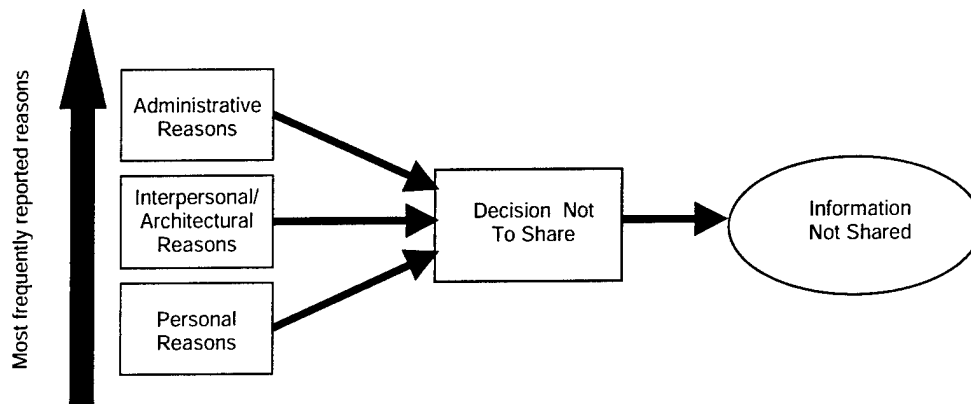


Figure 5: The revised model

One personal reason however scored significantly more frequently than the rest of its category. The personal reason, 'I do not believe the information that I hold would be of value to others', was the most frequently identified reason for lack of information sharing. These points will be discussed further in the chapter.

Discussion

Since personal reasons tend to be the least frequently reported reasons for not sharing information, personal incentives to induce the sharing of information would likely solve a smaller part of the problem than if the management focused efforts on other areas. Architectural and interpersonal barriers were reported significantly more frequently than personal barriers, but are approximately equal to each other. They are also reported significantly less frequent than administrative reasons. Administrative reasons were reported to be the most frequent reasons for not sharing information, significantly more so than any other group. This suggests that the removal of administrative barriers and the development of administrative policies in support of information sharing may significantly increase the flow of information between organizational parties.

This study suggests that organizational leaders may wish to evaluate the rules, regulations, policies and procedures that affect the sharing of information throughout their organization. In the evolution of an organization's business practices, people encounter situations that may necessitate a response from the organization. In order to control these responses, organizational policies and procedures are instituted. For example, a line worker provides some information to another section that was supposed to be kept confidential, so to keep this from happening again, a rule is instituted to scrub information before it is released. In another example, a high level manager may receive information in an unexpected format and spend more time than expected in digesting it, so a rule is established to formalize all information going up the chain of command. For whatever reason these rules and policies are set in place, their intended effect may have been realized but perhaps with unintended side effects; the reduction of information

sharing. In reevaluating administrative policies, management may wish to ascertain the policies effects on information sharing and weigh their costs (limiting the sharing of information) as well as their benefits.

This study suggests that people do not believe that the information they hold is of value to others in their organization. This may indicate a lack of understanding among organizational members of the organization's need for information and the kind of information it uses. If this is the case, it is likely to reduce the number of instances where people would use it for personal gain. This study also suggests that personal reasons for not sharing were not affected so much by personal gain but by not understanding that the information was needed. In other words, the choice not to share information was not an intentional one but rather unintentional. Management may wish to take measures to sensitize information workers to organizational information consumption needs. If someone does not believe the information is valuable to others, he might see sharing it as a waste of time. This may effect the sharing of information in a similar way as if it was being coveted. It may even have an additional effect on the quality of the data. If the information is deemed worthless to others, its maintenance may suffer in ways that would effect its shareability.

This may influence people to recognize the value of the information they hold and foster the discipline of managing information as a resource. Furthermore, management may wish to make efforts to solicit information on a regular basis in order to know what kinds of information is available and let members know what kinds of information are needed.

The suggestion that people do not believe that the information they hold is of value to others may also indicate the information being collected is indeed the wrong information for the organization to use. For whatever reason the information is being collected, management should revisit their information requirements periodically and ensure they are collecting the right information, in the right format.

Limitations

This study relied on a self-report of reasons why information was not shared. Therefore, this study can be no more accurate than the respondents knowledge of, and willingness to disclose why they did not share information. Further, the survey instrument administered in this study was not a validated instrument, though it was based on research undertaken by others. Further validation of the survey should gain more accurate and generalizable results. The survey used in this study posed the question in the form 'of the times I did not share information it was because...'. However, it did not specifically address times where information was requested but not shared. A follow on survey that addresses this may produce different results.

Also, a study such as this may not be immediately generalizable. It is exploratory at best. The organizational units studied were relatively homogeneous government agencies working toward similar goals: public service at no profit. Other types of organizations may have different more compelling reasons for the sharing or withholding of information. These dynamics were not addressed in this study.

Respondents were not asked specifically which kinds of information were not shared. Information may be the main product of an organization, a by-product of processes to produce other goods or services, or a mix of both. People may have different expectations of how these different kinds of information should be shared and ultimately affect their actions in sharing it. These expectations may effect the way people would answer a survey such as this.

The ownership of information was not addressed. When organizations handle large amounts of information that does not belong to them, they may institute safeguards to protect the information from unauthorized access. Issues of privileged information, trust, and liability of disclosure necessitate policies and procedures concerning the handling of information.

Recommendations for Future Study

To help generalize the results of this study, a study based on organizations with more diverse characteristics should be done. This would help clarify whether the responses in this study were unique to these organizational units, or whether they reflect a more common reality. The further development of classifications for information (such as main product of organizational efforts, by-product of processes, etc.) may help future researchers explore the many dynamics of information, how it is used within organizations, who uses it, and who shares it. Finally, Information Technology (IT) tends to change the flow of information from person to person and organization to organization. The effects of IT were not specifically addressed in this study.

Conclusions

This study demonstrated that within the organizations studied, administrative reasons were the most frequently occurring reasons for not sharing information. Architectural and interpersonal reasons were significantly less frequent in occurrence and personal reasons (save one) are the least frequent reason for not sharing information.

Many organizations invest significant time, effort, and money to increase the flow of information within their organizations. Since most organizations have a finite amount of resources to invest, spending is usually limited to where it can get the greatest return on investment. Therefore, leaders of organizations who are considering making investments in the efficient flow of information may consider focusing their attention on their business processes and procedures first.

The single most frequently reported reason for not sharing information was a lack of understanding of its value to others. The least frequent reasons reported were maintaining an expert status or using the information as a bargaining chip for other resources. Therefore, using information for personal gain is not as big of an information sharing problem as merely getting people to understand the value of the information they hold.

Appendix A: Data Collection Questions

SOMETIMES PEOPLE DO NOT SHARE INFORMATION WITH OTHERS IN THEIR ORGANIZATION AS MUCH AS WOULD BE BENEFICIAL. WE THINK THESE REASONS FALL INTO FOUR BASIC CATEGORIES. THESE ARE PERSONAL, INTERPERSONAL, PROBLEMS WITH INFORMATION SYSTEM ARCHITECTURE, AND PROBLEMS CAUSED BY ORGANIZATIONAL ADMINISTRATION.

CAREFULLY CONSIDER EACH STATEMENT AND MARK THE NUMBER THAT INDICATES THE FREQUENCY IN WHICH YOU BELIEVE EACH STATEMENT IS TRUE ABOUT INFORMATION SHARING BARRIERS YOU HAVE OBSERVED THROUGHOUT YOUR WORK EXPERIENCES.

Of the times I have not shared information with others, it is because...

1. I do not believe the information that I hold would be of value to others.

Always <input type="checkbox"/>	Very frequently <input type="checkbox"/>	Frequently <input type="checkbox"/>	Occasionally <input type="checkbox"/>	Rarely <input type="checkbox"/>	Very rarely <input type="checkbox"/>	Never <input type="checkbox"/>
------------------------------------	---	--	--	------------------------------------	---	-----------------------------------

2. I may be able to use the information as a bargaining chip to obtain other organizational resources.

Always <input type="checkbox"/>	Very frequently <input type="checkbox"/>	Frequently <input type="checkbox"/>	Occasionally <input type="checkbox"/>	Rarely <input type="checkbox"/>	Very rarely <input type="checkbox"/>	Never <input type="checkbox"/>
------------------------------------	---	--	--	------------------------------------	---	-----------------------------------

3. If the information I hold becomes common knowledge, I will no longer be the 'expert'.

Always <input type="checkbox"/>	Very frequently <input type="checkbox"/>	Frequently <input type="checkbox"/>	Occasionally <input type="checkbox"/>	Rarely <input type="checkbox"/>	Very rarely <input type="checkbox"/>	Never <input type="checkbox"/>
------------------------------------	---	--	--	------------------------------------	---	-----------------------------------

4. I feel others may use the information to over-regulate my job.

Always <input type="checkbox"/>	Very frequently <input type="checkbox"/>	Frequently <input type="checkbox"/>	Occasionally <input type="checkbox"/>	Rarely <input type="checkbox"/>	Very rarely <input type="checkbox"/>	Never <input type="checkbox"/>
------------------------------------	---	--	--	------------------------------------	---	-----------------------------------

Of the times I have not shared information with others, it is because...

5. I don't know where to get the information that is needed.

Always <input type="checkbox"/>	Very frequently <input type="checkbox"/>	Frequently <input type="checkbox"/>	Occasionally <input type="checkbox"/>	Rarely <input type="checkbox"/>	Very rarely <input type="checkbox"/>	Never <input type="checkbox"/>
------------------------------------	---	--	--	------------------------------------	---	-----------------------------------

6. I don't know how to use the information systems that are available.

Always <input type="checkbox"/>	Very frequently <input type="checkbox"/>	Frequently <input type="checkbox"/>	Occasionally <input type="checkbox"/>	Rarely <input type="checkbox"/>	Very rarely <input type="checkbox"/>	Never <input type="checkbox"/>
------------------------------------	---	--	--	------------------------------------	---	-----------------------------------

7. I needed to share information with someone higher than my boss but there is an accepted norm that subordinates do not circumvent the chain of command.

Always <input type="checkbox"/>	Very frequently <input type="checkbox"/>	Frequently <input type="checkbox"/>	Occasionally <input type="checkbox"/>	Rarely <input type="checkbox"/>	Very rarely <input type="checkbox"/>	Never <input type="checkbox"/>
------------------------------------	---	--	--	------------------------------------	---	-----------------------------------

8. I don't want to defend information that may conflict with currently accepted common knowledge.

Always <input type="checkbox"/>	Very frequently <input type="checkbox"/>	Frequently <input type="checkbox"/>	Occasionally <input type="checkbox"/>	Rarely <input type="checkbox"/>	Very rarely <input type="checkbox"/>	Never <input type="checkbox"/>
------------------------------------	---	--	--	------------------------------------	---	-----------------------------------

9. The information is too complex to be able to communicate it to others who do not possess a common core of knowledge.

Always <input type="checkbox"/>	Very frequently <input type="checkbox"/>	Frequently <input type="checkbox"/>	Occasionally <input type="checkbox"/>	Rarely <input type="checkbox"/>	Very rarely <input type="checkbox"/>	Never <input type="checkbox"/>
------------------------------------	---	--	--	------------------------------------	---	-----------------------------------

10. I assume that the information is already common knowledge.

Always <input type="checkbox"/>	Very frequently <input type="checkbox"/>	Frequently <input type="checkbox"/>	Occasionally <input type="checkbox"/>	Rarely <input type="checkbox"/>	Very rarely <input type="checkbox"/>	Never <input type="checkbox"/>
------------------------------------	---	--	--	------------------------------------	---	-----------------------------------

11. I am too busy to fully participate in the exchange of information.

Always <input type="checkbox"/>	Very frequently <input type="checkbox"/>	Frequently <input type="checkbox"/>	Occasionally <input type="checkbox"/>	Rarely <input type="checkbox"/>	Very rarely <input type="checkbox"/>	Never <input type="checkbox"/>
------------------------------------	---	--	--	------------------------------------	---	-----------------------------------

12. The information systems are too cumbersome to use.

Always <input type="checkbox"/>	Very frequently <input type="checkbox"/>	Frequently <input type="checkbox"/>	Occasionally <input type="checkbox"/>	Rarely <input type="checkbox"/>	Very rarely <input type="checkbox"/>	Never <input type="checkbox"/>
------------------------------------	---	--	--	------------------------------------	---	-----------------------------------

13. It is too hard to change the information system to handle new kinds of information.

Always <input type="checkbox"/>	Very frequently <input type="checkbox"/>	Frequently <input type="checkbox"/>	Occasionally <input type="checkbox"/>	Rarely <input type="checkbox"/>	Very rarely <input type="checkbox"/>	Never <input type="checkbox"/>
------------------------------------	---	--	--	------------------------------------	---	-----------------------------------

Of the times I have not shared information with others, it is because...

14. The information systems that I use cannot readily communicate with other systems.

Always <input type="checkbox"/>	Very frequently <input type="checkbox"/>	Frequently <input type="checkbox"/>	Occasionally <input type="checkbox"/>	Rarely <input type="checkbox"/>	Very rarely <input type="checkbox"/>	Never <input type="checkbox"/>
------------------------------------	---	--	--	------------------------------------	---	-----------------------------------

15. Information stored in my system has not been cross-checked with other systems and therefore may be inconsistent.

Always <input type="checkbox"/>	Very frequently <input type="checkbox"/>	Frequently <input type="checkbox"/>	Occasionally <input type="checkbox"/>	Rarely <input type="checkbox"/>	Very rarely <input type="checkbox"/>	Never <input type="checkbox"/>
------------------------------------	---	--	--	------------------------------------	---	-----------------------------------

16. The information systems I use were made for a specific purpose, making them useless for anything other than their intended purpose.

Always <input type="checkbox"/>	Very frequently <input type="checkbox"/>	Frequently <input type="checkbox"/>	Occasionally <input type="checkbox"/>	Rarely <input type="checkbox"/>	Very rarely <input type="checkbox"/>	Never <input type="checkbox"/>
------------------------------------	---	--	--	------------------------------------	---	-----------------------------------

17. Nobody has come up with a standard policy to make the organization's systems communicate easily.

Always <input type="checkbox"/>	Very frequently <input type="checkbox"/>	Frequently <input type="checkbox"/>	Occasionally <input type="checkbox"/>	Rarely <input type="checkbox"/>	Very rarely <input type="checkbox"/>	Never <input type="checkbox"/>
------------------------------------	---	--	--	------------------------------------	---	-----------------------------------

18. I do not have the authority to share the information.

Always <input type="checkbox"/>	Very frequently <input type="checkbox"/>	Frequently <input type="checkbox"/>	Occasionally <input type="checkbox"/>	Rarely <input type="checkbox"/>	Very rarely <input type="checkbox"/>	Never <input type="checkbox"/>
------------------------------------	---	--	--	------------------------------------	---	-----------------------------------

19. The information must be scrubbed for accuracy before I can release it.

Always <input type="checkbox"/>	Very frequently <input type="checkbox"/>	Frequently <input type="checkbox"/>	Occasionally <input type="checkbox"/>	Rarely <input type="checkbox"/>	Very rarely <input type="checkbox"/>	Never <input type="checkbox"/>
------------------------------------	---	--	--	------------------------------------	---	-----------------------------------

20. Management expects the information to be presented in a formal presentation, which introduces delays in sharing time-sensitive information.

Always <input type="checkbox"/>	Very frequently <input type="checkbox"/>	Frequently <input type="checkbox"/>	Occasionally <input type="checkbox"/>	Rarely <input type="checkbox"/>	Very rarely <input type="checkbox"/>	Never <input type="checkbox"/>
------------------------------------	---	--	--	------------------------------------	---	-----------------------------------

21. Management expects that information passed between offices must first go up one office's chain of command and down the other office's side.

Always <input type="checkbox"/>	Very frequently <input type="checkbox"/>	Frequently <input type="checkbox"/>	Occasionally <input type="checkbox"/>	Rarely <input type="checkbox"/>	Very rarely <input type="checkbox"/>	Never <input type="checkbox"/>
------------------------------------	---	--	--	------------------------------------	---	-----------------------------------

Of the times I have not shared information with others, it is because...

22. There are no established points of contact between functionally separated business units.

Always <input type="checkbox"/>	Very frequently <input type="checkbox"/>	Frequently <input type="checkbox"/>	Occasionally <input type="checkbox"/>	Rarely <input type="checkbox"/>	Very rarely <input type="checkbox"/>	Never <input type="checkbox"/>
------------------------------------	---	--	--	------------------------------------	---	-----------------------------------

23. Information is lost in the translation due to someone being assigned to interpret the information between organizational units.

Always <input type="checkbox"/>	Very frequently <input type="checkbox"/>	Frequently <input type="checkbox"/>	Occasionally <input type="checkbox"/>	Rarely <input type="checkbox"/>	Very rarely <input type="checkbox"/>	Never <input type="checkbox"/>
------------------------------------	---	--	--	------------------------------------	---	-----------------------------------

24. Other (If applicable. Please specify in the gray area below)

Always <input type="checkbox"/>	Very frequently <input type="checkbox"/>	Frequently <input type="checkbox"/>	Occasionally <input type="checkbox"/>	Rarely <input type="checkbox"/>	Very rarely <input type="checkbox"/>	Never <input type="checkbox"/>
------------------------------------	---	--	--	------------------------------------	---	-----------------------------------

Highlight here and type 'other' comments if needed

THANK YOU FOR TAKING THE TIME TO COMPLETE THIS QUESTIONNAIRE.

FINALLY, PLEASE INDICATE WHICH ORGANIZATION YOU WORK FOR AND PROVIDE ANY ADDITIONAL COMMENTS YOU MAY HAVE REGARDING THE SHARING OF INFORMATION, OR SUGGESTIONS TO IMPROVE THIS SURVEY. FEEL FREE TO ADD ADDITIONAL PAGES IF NECESSARY.

I belong to: ☐ AFMC/SC

☐ HQ MSG

☐ ESC/MM

Highlight here and type additional comments if needed

Bibliography

- Ackoff, Russell L. "The General Theory of Systems Applied to Management and Organization," The Systems Inquiry Series, 1: 27-34 (1980).
- Ackoff, Russell L. "Towards a System of Systems Concepts," Management Science, 17: 661-671 (July 1971).
- Ashby, W. Ross. "Cybernetics Today and its Future Contribution to the Engineering-Sciences," Foundation for Instrumentation Education and Research Distinguished Lecture 1961.
- Anderson, Lisa R. and Charles A. Holt. "Information Cascades in the Laboratory," American Economic Review, 87: 847-863 (December 1997).
- Attewell, Paul and James Rule. "Computing and Organizations: What We Know and What We Don't Know," Communications of the ACM, 27: 1184-1192 (December 1984).
- Bregha, Francois. "Institutional Barriers to Environmental Information," Environmental Monitoring and Assessment, 20: 191-200 (June 1990).
- Davenport, Thomas H., Sirkka L. Jarvenpaa, and Michael C. Beers. "Improving Knowledge Work Processes," Sloan Management Review: 53-65 (Summer 1996).
- Davis, Junior. "From informal to Formal Markets: A Case Study of Bulgarian Food Markets During Transition" Comparative Economic Studies, 38: 37-54 (Spring 1996)
- Elliott, Robert K. and Don M. Pallais. "First: Know Your Market," Journal of Accountancy, 184: 56-64.
- Goodhue, Dale L., Maichale D. Wybo, and Laurie J. Kirsch. "The Impact of Data Integration on the Costs and Benefits of Information Systems," MIS Quarterly: 293-311 (September 1992).
- Hackman, J. Richard, Greg Oldham, Robert Janson and Kenneth Purdy. "A New Strategy for Job Enrichment," California Management Review, 17: 213-240 (1975).

- Hahm, Sung Deuk, Janusz Szczypula, and L. Christopher Plein. "Barriers to Information Sharing in State Agencies: The Case of the Texas General Land Office," International Journal of Public Administration, 18: 1243-1267 (1995).
- Hammer, Michael. "Reengineering Work: Don't Automate, Obliterate," Harvard Business Review: 104-112 (July August 1990).
- Heminger, Alan and others. Air Force Institute of Technology: Analysis of Information Needs and Capabilities. Air Force Institute of Technology (AU), Wright-Patterson AFB OH, March 1996 (AFIT-LA-TR-96-1).
- Hitt, Lorin M. and Erik Brynjolfsson. "Information Technology and Internal Firm Organization: An Exploratory Analysis," Journal of Management Information Systems, 14: 81-101 (Fall 1997).
- Matheson, Lesley R. and Robert E. Tarjan. "Culturally Induced Information Impactedness: A Prescription for Failure in Software Ventures," Journal of Management Information Systems, 15: 23-40 (Fall 1998).
- Mennecke, Brian E. and Joseph S. Valacich. "Information is What You Make of it: The Influence of Group History and Computer Support on Information Sharing, Decision Quality, and Member Perceptions," Journal of Management Information Systems, 15: 73-97 (Fall 1998).
- Nunamaker Jr., Jay F., Robert O. Briggs, and others. "Flaming in the Electronic Classroom," Journal of Management Information Systems, 14: 45-59 (Winter 1997/1998).
- Sammler, Jeffrey L. and James E. Short. "An Examination of Information Technology's Impact on the Value of Information and Expertise: Implications for Organizational Change," Journal of Management Information Systems, 11: 59-74 (Fall 1994).
- Simon, Herbert A. Models of Bounded Rationality: Behavioral Economics and Business Organization. Cambridge: The MIT Press, 1982.

Vita

First Lieutenant Robert C. Kitchen was born on 18 Jul 1969 in Norwalk, Connecticut. He graduated from New Milford High School in New Milford Connecticut in June 1987. He entered the Air Force in January 1991 as a communications computer programmer. He entered undergraduate studies at Park College where he graduated with a Bachelor of Science degree in Management/Computer Information Systems in December 1995. He was commissioned through Officer Training School at Maxwell AFB in June of 1996.

His first assignment was Tinker AFB, Oklahoma at the Communications Systems Center as a Program Manager for the Standard Remote Terminal program. In July of 1996, he was assigned to the Material Systems Group at Wright-Patterson AFB, Ohio as a Program Manager for the Logistics Data Integration System. In May of 1998, he entered the Graduate Information Resource Management program, School of Logistics and Acquisition Management, Air Force Institute of Technology. Upon Graduation, he will be assigned to Headquarters, Air Force Reserve Command.

Permanent Address: PO Box 1912
New Milford, CT 06776

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE 10 DEC 99		3. REPORT TYPE AND DATES COVERED Master's Thesis
4. TITLE AND SUBTITLE WHY DIDN'T YOU TELL ME?: TOWARD BUILDING A MODEL OF WHY INFORMATION IS NOT SHARED WELL IN ORGANIZATIONS				5. FUNDING NUMBERS
6. AUTHOR(S) Robert C. Kitchen, 1Lt, USAF				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Air Force Institute of Technology 2950 P Street WPAFB, OH 45433-7765				8. PERFORMING ORGANIZATION REPORT NUMBER AFIT/GIR/LAS/99D-6
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSORING/MONITORING AGENCY REPORT NUMBER
11. SUPPLEMENTARY NOTES Advisor: Alan R. Heminger, (937) 255-3636 x4797, alan.heminger@afit.af.mil				
12a. DISTRIBUTION AVAILABILITY STATEMENT Approved for public release; distribution unlimited				12b. DISTRIBUTION CODE
13. ABSTRACT (Maximum 200 words) The effective use of information in an organization is vital to its success. One of the biggest investments being made today by companies is in their information infrastructures. However, with all of the resources being dedicated to improving information flows, evidence shows that organizations still do not share information as widely as they could or should be. Many studies have been conducted to learn the reasons why people in organizations do not share information as well as would be good. However, no study was found that reported the relative frequency of reported reasons for not sharing information. This paper gathers and reports that information. A study such as this can help information managers identify areas within their organizations where information is not being shared well and decide where focusing their efforts will be most productive when trying to increase information sharing.				
14. SUBJECT TERMS Information, Sharing, Resource management				15. NUMBER OF PAGES 50
				16. PRICE CODE
17. SECURITY CLASSIFICATION OF REPORT UNCLASSIFIED	18. SECURITY CLASSIFICATION OF THIS PAGE UNCLASSIFIED	19. SECURITY CLASSIFICATION OF ABSTRACT UNCLASSIFIED	20. LIMITATION OF ABSTRACT UL	